A3273-9

Vol. 60 No. 8 August 1985

JOURNAL OF Medical Education

PUBLICATION OF THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

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Medical Problem-Solving: A Critique of the Literature—Christine H. McGuire 587

The Legal Aspects of Medical School Admissions and Dismissals—Cynthia H. Grieger, Natalie K. Shemonsky, and Robert E. Driscoll, III 596

A Comparison of Medical Students' Performances in Independent Study and Traditional Programs—Larry A. Sachs, Michael Altman, Gregory L. Trzebiatowski, J. Hutchison Williams, Roger Verny, and Maree Bellchambers 602

The Relationship Between Stress and Attitudes Toward Leisure Among First-Year Medical Students—M. Lynn Folse, Debra A. DaRosa, and Roland Folse 610

A Review of the Recent Literature Relating to the Training of Medical Students in Alcoholism—Mark J. Hanlon 618

Congruence Between Curriculum Goals and Students' Perceptions of Learning Environment—W. Barry Biddle, Douglas U. Smith, and Lawrence Tremonti 627

Evaluation of Simultaneous Teaching of Extremities in Gross Anatomy Program—R. D. Peppler, T. E. Kwasigroch, and M. W. Hougland 635

Communications: Relationship Between Specialty Choice and Academic Performance—G. Craig Rosevear, Marsha S. Tickman, and Nancy E. Gary 640

Academic Clinicians Without Residency Training Programs—Samuel H. Greenblatt and Philip L. Gildenberg 641

Studying Reports of Women Medical Students on Their Eating Disorders—Paul Hamburg and David B. Herzog 644

A Miniworkshop Method for Teaching Medical Students Recognition of Personality Disorders—Harvey L. Abrams and Penelope Wasson Dralle 646

Assessment of Interpersonal Skills and Humanistic Qualities in Medical Residents—Richard R. Blurton and Ernest L. Mazzaferri 648

The Use of Written Simulations and Trained Patients To Evaluate a Course in Rheumatology—Rickiann Saylor-Bronstein, Charley Smyth, John T. Sharp, Clyde Tucker, and Carol Vojir 650

Editorial: Reagan Administration Budget Proposal Threatens the VA Medical Care System 653

Datagram: Net Patient Revenue at University-Owned Teaching Hospitals, 1982 655

Book Review 659

Bibliography 661

Letters to the Editor 666

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between academic performance and specialty selection as hypothesized by the present authors. A total of 104 students were asked to rate 18 factors on a 5-point scale from most to least influential according to how each affected their choice of specialty. Results from the 71 respondents (68 percent response rate) were rank-ordered. A student's perception that his strength was in his chosen discipline ranked first in this listing; that is, it was most influential. The definition of strength was left to the individual respondent. A strong academic performance in his selected area of specialization ranked only 11th. Other factors which were ranked as highly influential included intellectual challenges found in the discipline (second), educational experiences during the clinical science years of medical school (third), anticipated work conditions (fourth), and anticipated practice opportunities (fifth). The least influential factors were financial rewards of the discipline and perceptions of the discipline's status among physicians (tied for 14th place), length of postgraduate training period (16th), medical school faculty adviser (17th), and family members (18th).

Despite other researchers' findings to the contrary (2), the study reported here did not find a positive relationship between medical students' choice of postgraduate training and their academic performance as indicated by the NBME Part II subtest scores. Regardless of specialty choice, UMDNJ-RMS students as a group performed on the psychiatry subtest better than or as well as the other specialty subtests. With the exception of students entering the field of psychiatry, the students did not perform better on the NBME subtest in the area of their chosen specialty. Subjective data, that is, students' reports of factors that influenced their choice of a specialty, also failed to provide evidence of a relationship between that choice and their performance on the NBME subtests. In conclusion, there is a complex interplay of factors that result ultimately in a student's decision to pursue a particular specialty; academic performance does not appear to be a central force.

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Academic Clinicians Without Residency Training Programs

Samuel H. Greenblatt, M.D., and Philip L. Gildenberg, M.D., Ph.D.

In the late 1970s, the Subcommittee on Undergraduate Education of the Joint Committee on Education of the American Association of Neurological Surgeons and the Congress of Neurological Surgeons began a survey of "Neurosurgical Faculty Participation in Undergraduate Medical Education in American Medical Schools." The results of that survey (1) were ultimately reported in two sections, because clear differences emerged between the results for neurosurgical faculties with residencies and those without residencies. In general, the group with residencies had less involvement in medical school curricula, though this was not universally true. In the course of con-

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ducting that survey, information was gathered concerning manpower and activities of neurosurgical faculty members in schools without closely affiliated residencies, but the data were incomplete. Accordingly, the chairman of the subcommittee authorized a repeat survey of all medical schools and satellite campuses for the clinical years without closely affiliated neurosurgical residencies.

A report, "Status of Neurosurgery in American and Canadian Medical Schools Without Neurosurgical Residencies" (2), has been published recently. According to the report, 38 accredited U.S. medical schools and three Canadian medical schools did not have closely affiliated neurosurgical residencies. This represented 30 percent of 126 U.S. medical schools and 19 percent of 16 Canadian schools. Two of the U.S. schools were two-year institutions, whose students went on to receive their M.D. degrees at other medical schools. In addition, there were 10 satellite campuses, all in the United States, where medical students received their clinical training and obtained their M.D. degrees at locations that did not have affiliated neurosurgical residencies.

In the more recent neurosurgical survey (2), responses were obtained from all 51 medical schools and satellite campuses without affiliated neurosurgical residencies. One two-year school (Morehouse School of Medicine) had no faculty neurosurgeons. Among the remaining 50 institutions, there were 57 full-time neurosurgeons at 27 schools and satellite campuses. Another 27 neurosurgeons were partially salaried at 12 schools, which included some of those schools that also had full-time neurosurgeons. Thus, 33 schools and satellite campuses provided some institutional support for 84 faculty neurosurgeons. In addition, a total of 187 community neurosurgeons were affiliated in voluntary status with 36 schools and satellite campuses. Therefore, there was a total of 271 neurosurgeons at 40 medical schools and 10 satellite campuses without closely affiliated neurosurgical residencies, but 17 of these 50 institutions depended entirely on voluntary neurosurgical faculty members.

Other Clinicians

The number of other academic clinicians working at schools without closely affiliated residencies in their specialties has not been documented. However, the data in Table 1 offer an indication. It shows how many of the 124 U.S. M.D.-degree-granting medical schools as of 1983–84 did not have closely affiliated residency training programs in 17 different specialties. To compile the data, the authors compared a list of the hospitals affiliated with accredited and provisionally accredited medical schools in the United States (3) with published lists of accredited residency training programs (4, 5) for 1983–1984. The data were occasionally supplemented by information obtained from colleagues of the authors and by telephone conversations with officials at a few schools. The 17 specialties represent those that are certified by 16 different specialty boards (neurology and psychiatry have the same board). Subspecialty programs (such as cardiology and pediatric neurology), more unusual specialties (for example, aerospace medicine and nuclear medicine), and

TABLE 1

Number of 124 U.S. Medical Schools Without Closely Affiliated Residency Training Programs in 17 Specialties, 1983–84

Specialty	No. of Schools
Anesthesiology	24
Dermatology	41
Family practice	22
Internal medicine	0
Neurological surgery	36
Neurology	21
Obstetrics and gynecology	4
Ophthalmology	18
Orthopedic surgery	8
Otolaryngology	33
Pathology	8
Pediatrics	2
Physical medicine and rehabilitation	66
Psychiatry	5
Radiology-diagnostic	13
Surgery	1
Urology	20

Sources: References 3–5.

programs requiring extensive prior training in other fields (for example, plastic surgery and thoracic surgery) were not included.

According to Table 1, most of the primary care specialties (internal medicine, obstetrics and gynecology, pediatrics, and surgery) were well represented by residencies affiliated with almost all medical schools. The notable exception was family practice; there were no closely affiliated residencies in this specialty at 22 schools. Among the remaining 12 specialties in Table 1, three were unrepresented at fewer than 10 schools (orthopedic surgery, pathology, and psychiatry). Thus, in addition to family practice, more than 10 schools did not have closely affiliated residency training programs in anesthesiology, dermatology, neurological surgery, neurology, ophthalmology, otolaryngology, physical medicine and rehabilitation, diagnosis radiology, and urology. The data in Table 1 did not permit a calculation of the actual number of individual clinicians who worked at schools without closely affiliated residencies in their specialties, but they did imply that the detailed information about faculty neurosurgeons without closely affiliated residencies may be representative of specialists in other fields.

Conclusions

It is apparent that there are large numbers of academic clinicians who are not affiliated with residency training programs in their specialties. Moreover, their numbers are likely to increase as the result of governmental and societal pressures to contain or reduce the numbers of physicians in many specialties. Even if fewer faculty clinicians are needed to staff residency programs, medical schools without closely affiliated residencies in some fields still need to have those specialties represented on their faculties to teach medical students and residents in other specialties. For any clinician-teacher, with or without a closely affiliated residency program, it is important to be in touch with educational developments in his specialty at the national level. In neurosurgery, the surveys previously described (1, 2) showed that inadequate integration into the national cadre of neurosurgical educators was a major problem for academic neurosurgeons who were not affiliated with neurosurgical residency programs. Therefore, it is reasonable to presume that academic clinicians without residencies in other specialties will have similar difficulties.

In the neurosurgical community, leadership in educational efforts at all levels—undergraduate, residency, and continuing education—has devolved upon national groups that consist largely of residency program directors. Since there was no list of the neurosurgical chiefs at medical schools without closely affiliated neurosurgical residencies, the neurosurgical faculties at those schools were relatively and inadvertently excluded from the activities of the national groups. When this problem was realized and a list of academic neurosurgical chiefs without residencies was compiled (2), the American Board of Neurological Surgery (ABNS) in 1984 "voted to develop a dialogue with chiefs of neurosurgical programs at medical schools having no neurosurgical residency training programs" (6). These schools have already been included in an ABNS survey of critical care issues, and the board plans to share information on all of its educational activities and concerns with all neurosurgical chiefs, including those without residency training programs. This action will be beneficial not only to the faculty members who receive the information and assistance but also to the medical students and nonneurosurgical residents whom they teach.

On the basis of the experience reported here regarding neurosurgeons, educational leaders in other specialties may wish to consider similar efforts in their own fields.

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Studying Reports of Women Medical Students On Their Eating Disorders

Paul Hamburg, M.D., and David B. Herzog, M.D.

The recent literature has described the stressful nature of graduate education in general and of medical school in particular (1, 2). Gaensbauer and Mizner (1) emphasized the succession of developmental tasks facing students in each year of medical school, beginning with the complexity and quantity of learning in the first year and continuing with the stress of assuming patient care responsibility in the clinical years. They discussed the challenges of fatigue in medical training, balancing personal needs with new responsibilities, and the difficulty of incorporating marital or personal crises into the framework of graduate medical education.

Studies have focused particular concern upon possible additional stresses experienced by women in graduate professional programs, including the impact of a competitive career path upon their identities as women (3–5). Gaensbauer and Mizner (1) described several sources of these stresses, including the postponement of having children, the conflict between having to be assertive and older definitions of "feminine" behavior as passive and giving, the struggle between a desire to nurture and professional detachment, and the isolation of being a single woman within the medical school milieu. Edwards and Zimet (2) found more intense concerns about loneliness, feeling out of place, and being unable to reach expected goals among their sample of women in medical school than among male counterparts. Hoferek and Sarnowski (6) reported more feelings of isolation, a difficulty in making friends, and less sense of support from the surrounding community among their sample of women medical students than among the male students.

The study reported here was supported in part by grants from the GenRad Foundation, Concord, Massachusetts, and the Milton Fund.

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Methods

As part of a pilot study concerning eating disorders, Dr. David B. Herzog and colleagues at the Massachusetts General Hospital, Boston, in 1983 asked a group of 212 female students at a major eastern medical school to fill out a questionnaire concerning eating behavior and attitudes. That study was a result of requests from several female students for assistance in setting up a support group for

DATAGRAM

Net Patient Revenue at University-Owned Teaching Hospitals, 1982

During the two past years, the Department of Teaching Hospitals of the Association of American Medical Colleges (AAMC) conducted its 13th annual survey of financial and general operating data for the university-owned members of the Council of Teaching Hospitals (COTH). A questionnaire was sent to all 66 hospitals in July 1983. Follow-up requests for participation were made in September and November. By January 1984 all 66 had submitted responses.

The questionnaire generally requested data from the hospitals' fiscal 1982 Medicare cost reports. The questions were essentially the same as those asked in the surveys for the previous two years.

State Appropriations

Nearly two-thirds of the hospitals (43 of the 66) reported they received some state appropriations. Many of the state appropriations were specifically earmarked to support clinical teaching and other educational activities or to provide care for indigent or partially funded patients. However, these labels may be somewhat misleading, because it is not possible to distinguish strictly between patient care and educational costs in a teaching hospital. Moreover, some states contracted with the university-owned hospitals to provide specific patient care services (for example, psychiatric care), but the state funding for these services was not usually called an "appropriation."

The percentage of total operating revenues derived from state appropriations was used as an indicator of how dependent the hospitals were on the appropriations. Table 1 shows the variation in these percentages among hospitals responding to the fiscal 1975 through fiscal 1982 surveys that reported they received state appropriations. In all years, more than half of the respondents received less than 20 percent of their operating revenues from state appropriations, and more than three-fourths received less than 30 percent. In fiscal 1982, only six hospitals (14 percent) received more than 30 percent of their total operating revenues from state appropriations.

A total of $628 million was appropriated in fiscal 1982 by the states to the 43 hospitals, which equates to an average appropriation of approximately $14.6 million. This was $1.4 million (9.5 percent) higher than the average appropriation received by those hospitals in fiscal 1981.

TABLE 1

Percentage of State-Funded Teaching Hospitals by Proportion of Total Operating Revenue Received from State Appropriations, 1975 Through 1982

Fiscal Year	Percentage Total Operating Revenue from State Appropriations					
	0–10 Percent	11–20 Percent	21–30 Percent	31–40 Percent	41–50 Percent	51–100 Percent
1982 (n = 43)	35	28	23	5	2	7
1981 (n = 43)	30	35	26	2	5	2
1980 (n = 44)	36	27	18	9	9	0
1979 (n = 43)	37	21	26	5	9	2
1978 (n = 41)	29	32	27	5	7	0
1977 (n = 41)	36	25	17	15	5	2
1976 (n = 40)	37	23	18	15	7	0
1975 (n = 38)	21	29	24	10	13	3

TABLE 2

Sources of Net Patient Revenue for University-Owned Teaching Hospitals That Received State Appropriations Earmarked for Patient Care, Fiscal Years 1981 and 1982

(In thousands of dollars)

Revenue Source	Fiscal 1982 (n = 18)		Fiscal 1981 (n = 18)	
	Amount	Percent	Amount	Percent
State appropriations*	277,331	19.0	237,943	19.8
Blue Cross	170,955	11.7	142,934	11.9
Commercial insurance	254,281	17.4	174,458	14.5
Self-pay	124,078	8.5	79,615	6.6
Medicare	332,656	22.8	280,551	23.3
Medicaid	178,795	12.2	184,496	15.3
County appropriations	20,295	1.4	18,758	1.6
City appropriations	0	0	0	0
Additional welfare payments	16,281	1.1	22,168	1.8
Workman's compensation	7,661	0.5	6,163	0.5
Other	78,927	5.4	56,253	4.7
Total	1,461,261	100.0	1,203,338	100.0

* May include funds for nonpatient care uses.

Patient Revenue by Source

Twenty-nine of the fiscal 1982 survey respondents reported net patient revenue by source. Twenty-four of these hospitals reported net patient revenue by source in the previous year's survey. In order to eliminate possible bias, tables 2 through 4 compare data only for those institutions that reported net patient revenue in both years for the variables being examined.

Eighteen hospitals reporting net patient revenues received state appropriations in both fiscal 1981 and 1982 (Table 2). In both years, state appropriations accounted for nearly one-fifth of the revenues, making it the second largest source of revenues. Medicare was the largest, providing 22.8 percent of the net patient revenues in fiscal 1982. Also in fiscal 1982, commercial insurance carriers were the third largest source of net income (17.4 percent), and Medicaid was fourth (12.2 percent). In fiscal 1981, Medicaid's payments to these hospitals had been larger than those of the commercial insurers.

The average net patient revenues for the 18 hospitals that received state appropriations in fiscal 1982 was $81.2 million. This was 21 percent higher than the average revenues at those hospitals in fiscal 1981.

Table 3 shows the aggregate data for the six hospitals that were able to report net revenues for fiscal 1982 and 1981 but did not receive state appropriations. Medicare was also the largest payer for this group of hospitals, providing nearly 30 percent of the net patient revenues. Blue Cross was the second largest payer, providing 22 percent of the net revenues. The commercial insurance companies and Medicaid were the next largest, with each providing approximately 15 percent of the revenues.

The average net patient revenues for these six hospitals was $88 million in fiscal 1982, an increase of 17.6 percent over fiscal 1981.

Sources of Revenue by Type of Care

Twenty-three hospitals were able to report the sources of their net patient revenue separately for inpatient and outpatient care for fiscal 1981 and 1982 (Table 4). For the inpatient sector, Medicare was the leading payer in both years, providing more than 27 percent of the net revenues. In fiscal 1982, commercial insurance companies were the second largest

TABLE 3

Sources of Net Patient Revenue for University-Owned Teaching Hospitals That Did Not Receive State Appropriations Earmarked for Patient Care, Fiscal Years 1981 and 1982

(In thousands of dollars)

Revenue Source	Fiscal 1982 ($n = 6$)		Fiscal 1981 ($n = 6$)	
	Amount	Percent	Amount	Percent
Blue Cross	117,303	22.2	99,604	22.2
Commercial insurance	83,322	15.8	64,772	14.4
Self-pay	26,666	5.0	26,474	5.9
Medicare	154,267	29.2	126,786	28.2
Medicaid	77,523	14.7	70,693	15.7
County appropriations	462	0.1	587	0.1
City appropriations	0	0	0	0
Additional welfare payments	0	0	0	0
Workman's compensation	1,592	0.3	1,493	0.3
Other	67,105	12.7	58,911	13.1
Total	528,240	100.0	449,321	100.0

TABLE 4

Sources of Net Patient Revenue by Type of Care in University-Owned Teaching Hospitals, Fiscal Years 1981 and 1982*

(In thousands of dollars)

Revenue Source	Fiscal 1982 ($n = 23$)				Fiscal 1981 ($n = 23$)			
	Outpatient		Inpatient		Outpatient		Inpatient	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Blue Cross	30,694	13.1	257,564	16.5	28,009	13.6	214,528	16.1
Commercial insurance	33,798	14.4	303,804	19.5	27,315	13.3	211,915	15.9
Self-pay	43,608	18.6	100,744	6.5	35,819	17.4	65,777	5.0
Medicare	47,551	20.3	429,311	27.5	38,901	18.9	361,382	27.2
Medicaid	29,724	12.7	218,748	14.0	31,330	15.3	217,062	16.3
State appropriations†	17,732	7.6	88,429	5.7	19,520	9.6	119,365	9.0
County appropriations	5,153	2.2	15,604	1.0	5,632	2.7	13,714	1.0
City appropriations	0	0	0	0	0	0	0	0
Additional welfare payments	2,702	1.1	13,579	0.9	2,880	1.4	19,288	1.5
Workman's compensation	1,767	0.7	7,486	0.5	758	0.4	6,898	0.5
Other	21,926	9.3	124,106	7.9	15,273	7.4	99,891	7.5
Total	234,656	100.0	1,559,374	100.0	205,437	100.0	1,329,821	100.0

* Data reported only for those hospitals able to separate net patient revenue into inpatient and outpatient categories.

† Includes only funds reported as net patient revenue.

source of net inpatient revenue, (19.5 percent) followed by Blue Cross (16.5 percent) and Medicaid (14.0 percent). In fiscal 1981, Medicaid was the second largest source (16.3 percent); Blue Cross was the third (16.1 percent), and the commercial insurers were fourth (15.9 percent).

The average total net inpatient revenues rose from $57.8 million in fiscal 1981 to $67.8 million in fiscal 1982, an increase of 17.3 percent.

For the outpatient service, Medicare again was the single largest source of net revenue, providing approximately one-fifth of the net revenues in fiscal 1982. The self-pay patients accounted for the next largest portion of the

revenues followed in fiscal 1982 by commercial insurance companies, Blue Cross, and Medicaid.

The total average outpatient net revenues for these 23 hospitals in fiscal 1982 was $10.2 million. This is 14.2 percent more than the average net outpatient revenues in fiscal 1981.

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